

Claims

1. A composition comprising

at least one polyurethane prepolymer **A** having isocyanate end groups,
5 prepared from at least one polyisocyanate and at least one polyol;

and

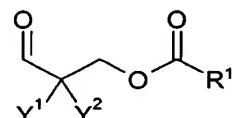
at least one polyaldimine **B** which is obtainable from

10 at least one polyamine **C** having aliphatic primary amino groups

and

at least one aldehyde **D** of the formula

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where Y¹ and Y² either

20 independently of one another are an alkyl, aryl or arylalkyl group which if desired can in each case be substituted, if desired can in each case contain heteroatoms and if desired can in each case contain unsaturated components,

or Y¹ and Y²

25 are connected to one another to form a carbocyclic or heterocyclic ring which has a ring size of between 5 and 8, preferably 6, atoms and if desired has one or two singly unsaturated bonds;

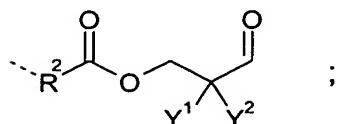
30 and

R¹ stands either

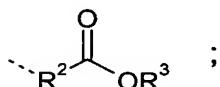
for a linear or branched alkyl chain having 11 to 30 carbon atoms, if desired having at least one heteroatom, in particular having at least one ether oxygen, or for a singly or multiply unsaturated linear or branched hydrocarbon chain having 11 to 30 carbon atoms;

5

or for



or for



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where R² stands for a linear or branched or cyclic alkylene chain having 2 to 16 carbon atoms, if desired having at least one heteroatom, in particular having at least one ether oxygen, or for a singly or multiply unsaturated linear or branched or cyclic hydrocarbon chain having 2 to 16 carbon atoms;

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R³ is a linear or branched alkyl chain having 1 to 8 carbon atoms.

20 2. The composition as claimed in claim 1, characterized in that the polyurethane prepolymer A has a free isocyanate group content of 0.1% to 15% by weight, preferably 0.5% - 5% by weight, based on the polyurethane prepolymer as a whole.

25 3. The composition as claimed in claim 1 or 2, characterized in that the polyisocyanate for preparing the polyurethane prepolymer A is a diisocyanate, in particular selected from the group consisting of MDI, TDI, HDI and IPDI.

4. The composition as claimed in any one of the preceding claims, characterized in that the polyol for preparing the polyurethane prepolymer **A** has an average OH functionality of 1.6 to 3.

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5. The composition as claimed in claim 4, characterized in that the polyol is a polyoxyalkylene polyol, in particular having a degree of unsaturation < 0.02 meq/g and a molecular weight M_n of 1000 - 30 000 g/mol.

10 6. The composition as claimed in claim 5, characterized in that the polyol is a polyol prepared by means of DMC catalysis.

15 7. The composition as claimed in claim 4, characterized in that the polyol is a polyoxyalkylene polyol, in particular having a molecular weight M_n of 400 - 8000 g/mol.

8. The composition as claimed in any one of claims 4 - 7, characterized in that the polyol is a polyoxypropylene polyol or an EO-endcapped polyoxypropylene polyol.

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9. The composition as claimed in any one of the preceding claims, characterized in that for preparing the polyaldimine **B** the aldehyde **D** is used stoichiometrically or in a stoichiometric excess in relation to the primary amino groups of the polyamine **C**.

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10. The composition as claimed in any one of the preceding claims, characterized in that the polyurethane prepolymer **A** and the polyaldimine **B** are present in a ratio of 0.1 - 1.1 equivalent of aldimine groups per equivalent of isocyanate groups.

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11. The composition as claimed in any one of the preceding claims, characterized in that the polyamine **C** having aliphatic primary amino groups is selected from the group consisting of 1,6-hexamethylene-

diamine, MPMD, DAMP, 2,2,4- and 2,4,4-trimethylhexamethylene-diamine, 4-aminomethyl-1,8-octanediamine, IPDA, 1,3- and 1,4-xylylene-diamine, 1,3- and 1,4-bis(aminomethyl)cyclohexane, bis(4-aminocyclohexyl)methane, bis(4-amino-3-methylcyclohexyl)methane, 3(4),8(9)-bis(aminomethyl)tricyclo[5.2.1.0^{2,6}]decane, 1,2-, 1,3- and 1,4-diaminocyclohexane, polyoxyalkylene-polyamines having in theory two or three amino groups, especially Jeffamine[®] EDR-148, Jeffamine[®] D-230, Jeffamine[®] D-400 and Jeffamine[®] T-403, and, in particular, mixtures of two or more of the aforementioned polyamines.

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12. The composition as claimed in any one of the preceding claims, characterized in that the aldehyde **D** used for preparing the polyaldimine **B** is obtainable by means of an esterification reaction of a β -hydroxy aldehyde with a carboxylic acid, in particular without the use of a solvent, the β -hydroxy aldehyde being prepared, if desired in situ, from formaldehyde, and/or paraformaldehyde or an oligomeric form of formaldehyde, and from a second aldehyde, this second aldehyde being selected from the group consisting of isobutyraldehyde, 2-methylbutyraldehyde, 2-ethylbutyraldehyde, 2-methylvaleraldehyde, 2-ethylcaproaldehyde, cyclopentanecarboxaldehyde, cyclohexanecarboxaldehyde, 1,2,3,6-tetrahydrobenzaldehyde, 2-methyl-3-phenylpropionaldehyde, 2-phenylpropionaldehyde and diphenylacetaldehyde, preferably isobutyraldehyde.

- 25 13. The composition as claimed in any one of the preceding claims, characterized in that the aldehyde **D** used for preparing the polyaldimine **B** is obtainable by means of an esterification reaction of 3-hydroxypivalaldehyde, which is prepared if desired in situ from formaldehyde, and/or paraformaldehyde, and isobutyraldehyde, with a carboxylic acid, in particular without the use of a solvent.

- 30 14. The composition as claimed in claim 13, characterized in that the carboxylic acid used for preparing the aldehyde **D** is selected from the

group consisting of lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, succinic acid, adipic acid, azelaic acid and sebacic acid.

- 5 15. The composition as claimed in any one of the preceding claims, characterized in that $Y^1 = Y^2 = \text{methyl}$.
- 10 16. A process for preparing the composition as claimed in any one of claims 1 - 15, comprising a step of preparing a polyaldimine by reacting an aldehyde with an amine.
- 15 17. The process for preparing the composition, as claimed in claim 16, further comprising a step of preparing an aldehyde **D** from a carboxylic acid and a β -hydroxy aldehyde, in particular without the use of a solvent, the β -hydroxy aldehyde being prepared, if desired *in situ*, from formaldehyde, and/or paraformaldehyde or an oligomeric form of formaldehyde, and from a second aldehyde.
- 20 18. The process for preparing the composition, as claimed in claim 16, further comprising a step of preparing an aldehyde **D** from a carboxylic acid and 3-hydroxypivalaldehyde and isobutyraldehyde, in particular without the use of a solvent, 3-hydroxypivalaldehyde being prepared, if desired *in situ*, from formaldehyde, and/or paraformaldehyde.
- 25 19. The use of the composition as claimed in any one of claims 1 - 15 as an adhesive, sealant, coating or covering.
- 30 20. An arrangement characterized in that it comprises a composition as claimed in any one of claims 1 - 15.
21. An article whose surface has been at least partly contacted with a composition as claimed in any one of claims 1 - 15.

22. A method of adhesive bonding, characterized in that it comprises a step of contacting with a composition as claimed in any one of claims 1 - 15.
23. A method of sealing, characterized in that it comprises a step of contacting with a composition as claimed in any one of claims 1 - 15.
24. A method of coating, characterized in that it comprises a step of contacting with a composition as claimed in any one of claims 1 - 15.
- 10 25. The method as claimed in any one of claims 22 - 24, characterized in that it comprises an additional step of curing in air.
- 15 26. The method as claimed in any one of claims 22 - 25, characterized in that it further comprises a step of contacting with a water-containing component or an admixture thereof.